UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/741,434	12/21/2000	Takashi Fukuda	2000_1743A	5280

513 7590 12/23/2004

WENDEROTH, LIND & PONACK, L.L.P.
2033 K STREET N. W.
SUITE 800
WASHINGTON, DC 20006-1021

EXAMINER	
ANGEBRANNDT, MARTIN J	

ART UNIT	PAPER NUMBER
1756	

DATE MAILED: 12/23/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/741,434	FUKUDA ET AL.	
	Examiner	Art Unit	
	Martin J Angebranndt	1756	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 October 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

1. The response provided by the applicant has been read and given careful consideration. Response to the arguments and amendment of the applicant are presented after the first rejection to which they are directed.

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3 Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over **any one of** Natansohn et al. '381, Bieringer et al. '846, Eich et al. '859 **or** Savant et al. '221, in view of Kokado JP 63-117322 and Goldberg '261.

Natansohn et al. '381 teach polyesters, polystyrene, polyacrylates, polyurethanes, polyamides and polymethylmethacrylates with photochromic azobenezene moieties incorporated therein. (4/48-5/68). The recording of gratings or holograms is disclosed. (8/3-6 and 8/36-37). These are disclosed as erasable. (8/14+). The examiner holds that the MW is between 1,000 and 1,000,000 based upon the Tg and that it is likely near to 1,000,000. The heating of the polyermic compositions to above the Tg is disclosed. (2/4-45)

Bieringer et al. '846 teach various polymeric materials with azomoieties bonded thereto and recording information in them. These are disclosed as having MW of 5,000 to 2,000,000 in lines 34-37 of column 8. The exposure takes place at wavelengths which the side chain groups absorb (9/1-4)

Eich et al. '859 teach various polymeric materials with azomoieties bonded thereto and recording information in them. These are disclosed as having MW of 10,100-47,800 in the table

in column 11. The heating of these to above the Tg or glass transition temperature is disclosed. (4/55-67,7/59-66 and 8/10-42)

Savant et al. '221 teach various polymeric materials with azomoieties bonded thereto and recording information in them. These include polymers of various MW including as low as 4,000. The entry for PMMA and other acrylate polymers, specifically includes low, medium and high MW polymers. The preheating of the polymer prior to recording is disclosed. (20/57-63). The absorption of light is disclosed as causing heating of the medium (23/56-67)

Kokado JP 63-117322 teaches preheating an optical recording medium with a larger laser beam and writing information with a smaller beam. The preheating of the larger beam brings it proximate to the fusion temperature and then written upon. The writing is closer (more ideal) to the desired effect. (abstract). Note figures 1-4.

Goldberg '261 teaches optical recording, where the recording layer is preheated to near the melting point and another beam performs the recording. (3/6-43). See figures 2, 3 and 5. The use of two lasers allows two lower powered lasers to effect the same change as a more expensive laser. (1/40-68 and 3/48-5/2). The preheating beam can be the smaller of the two. (4/45-54). The diameter is ½ the diameter of the write spot. Therefore the smaller beam in area is $(1/2)^2$ that of the larger beam or 25% and the preheat fraction which is the energy of the preheat beam/total energy of both beams. The preheat fraction is disclosed as 0.5 or 50% of the total heating or irradiation (4/3-54).

It would have been obvious to modify **any one of** Natansohn et al. '381, Bieringer et al. '846, Eich et al. '859 **or** Savant et al. '221 by using two overlapping beams to record the data with preheating using one of the beams recording with the other to more accurately (ideally)

record the desired data as discussed by Kokado JP 63-117322 and to allow cheaper lower powered lasers to be used as discussed by Goldberg '261. The examiner notes that the primary references all discuss the Tg of the medium and the use of laser heating during recording, which is congruent with the heat mode recording discussed by the secondary references and would reasonably expected to realize the advantages discussed by Kokado JP 63-117322 and Goldberg '261.

The applicant argues that the difference in the types of media disclosed in the primary references (ie azo dye containing optical recording media) and that used in the secondary references Kokado JP 63-117322 and Goldberg (metallic recording layers) would render them non-analogous to one skilled in the art. The examiner disagrees, noting that the recording in each of these cases is due to absorption of the laser irradiation, which is converted into heat by the absorption. The process of writing is the same irrespective of the absorption being due to an organic or inorganic material. In the instant case, the heating above the Tg to free the movement about the azo linkage is similar to melting a metal film. The examiner notes that the Tg of the film used in example 1 is 128 degree C. [0032], the absorption of the light [0027] and the effects of high irradiance (photodegradation) is disclosed. [0028]. The insertion of the term "photoresponsive" only excludes heating from purely thermal sources. Further, the benefit of using two relatively cheap lasers and the sum of their intensities to replace a single much more expensive laser having an intensity similar to the sum of the intensities of the two cheaper lasers would clearly be fiscally beneficial irrespective of the type of recording medium used. Depending upon the particular laser, the size of the laser and the associated heat dissipation

might also be considerations (gas lasers are much larger than semiconductor lasers and often require cooling means). The rejection stands.

4 Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over **any one of** Natansohn et al. '381, Bieringer et al. '846, Eich et al. '859 **or** Savant et al. '221, in view of Yamaguchi et al. '128 and Aoi et al. '080.

Yamaguchi et al. '128 teach with respect to figure 2, a preheating semiconductor laser and a recording semiconductor laser, where the preheating laser forms spot 22 in figure 3 and the recording laser forms smaller spot 23. (2/32-68). The preheating can compensate for temperature variations during recording to produce a more precise spot by preheating the recording medium to a uniform temperature. (1/40-2/6). Figure 4 shows the intensity of the preheat beam as being 45% of that used for writing.

Aoi et al. '080 teach overlapping spots during recording to preheat the heat mode recording medium with respect to figures 3-4 (4/16-5/11), where neither of the lasers has sufficient power to record information alone, but the sum of the intensity is sufficient to recording information,which allows two cheaper low powered lasers to be used rather than a single high powered laser (1/58-2/36 and 4/57-43). The intensities are the same (5/5-11) Dye based recording is used. (3/1-4). A semiconductor laser may be used for each of the lasers (5/44-49)

It would have been obvious to modify **any one of** Natansohn et al. '381, Bieringer et al. '846, Eich et al. '859 **or** Savant et al. '221 by using two overlapping beams to record the data with preheating using one of the beams recording with the other to more accurately (ideally) record the desired data as discussed by Yamaguchi et al. '128 and to allow cheaper lower

powered lasers to be used as discussed by Aoi et al. '080. The examiner notes that the primary references all discuss the Tg of the medium and the use of laser heating during recording, which is congruent with the heat mode recording discussed by the secondary references and would reasonably expected to realize the advantages discussed by Yamaguchi et al. '128 and Aoi et al. '080.

In addition to the basis relied upon above, please note the sections of Yamaguchi et al. '128 and Aoi et al. '080 which describe relative intensities of the preheating and writing beams.

5 **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

6 Any inquiry concerning this communication or earlier communications from the examiner should be directed to Martin J Angebranndt whose telephone number is 571-272-1378. The examiner can normally be reached on Monday-Thursday and alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Huff can be reached on 571-272-1385. The fax phone numbers for the

organization where this application or proceeding is assigned are 703-872-9309 for regular communications and 703-872-9309 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

Martin J Angebrannndt
Primary Examiner
Art Unit 1756

12/15/2004